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NATA

LumCAT: 2-1258-N	
Luminaire: 92.70.045.00+92.70.059.00	
Report No: NATA0100	Voltage(V): 35.8000
Test No: GC2018110806	Current(A): 0.6000
LampCAT: PHILIPS 1205 G7	Power (W): 21.4800
Lamp flux(lm): 2969.0	PF: 0.0000
Number of Lamps: 1	Ballast type: DC
Length(mm): 70	Width(mm): 70
Phm Type: C	Height(mm): 0

Photometric Results

Lumens(lm): 2254.15
Efficiency(%): 75.92%
Lumens(lm)/Power(W): 105.08
Central intensity(cd): 12511.410
Maximum intensity(cd): 12511.410
Angle of maximum intensity: C=0.0 γ =0.0
Beam Angle(50%Imax): [C0/180]Total=18.9
[C90/270]Total=18.9
Field angle(10%Imax): [C0/180]Total=37.3
[C90/270]Total=37.3
Maximum s/h(1/2): C0_180=0.32 C90_270=0.32
Maximum s/h(1/4): C0_180=0.31 C90_270=0.31
Up flux rate of lamp(%): 0.00%
Down flux rate of lamp(%): 76.02%
Up flux rate of LUM(%): - -
Down flux rate of LUM(%): 100.00%
CIE Type : Direct lighting
Output flux ratio in π solid angle : 97.536%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
0.0	12511.406	2.993	2.993	.101%	.133%
1.0	12465.000	23.856	26.849	.804%	1.191%
2.0	12268.125	46.951	73.801	1.581%	3.274%
3.0	11899.617	68.294	142.095	2.300%	6.304%
4.0	11480.977	87.824	229.92	2.958%	10.200%
5.0	10842.469	103.628	333.547	3.490%	14.797%
6.0	10136.320	116.189	449.737	3.913%	19.951%
7.0	9173.391	122.596	572.333	4.129%	25.390%
8.0	7974.070	121.699	694.032	4.099%	30.789%
9.0	6760.898	115.981	810.013	3.906%	35.934%
10.0	5578.453	106.227	916.24	3.578%	40.647%
11.0	4460.625	93.335	1009.576	3.144%	44.787%
12.0	3645.000	83.105	1092.681	2.799%	48.474%
13.0	3029.484	74.732	1167.413	2.517%	51.789%
14.0	2518.102	66.804	1234.217	2.250%	54.753%
15.0	2068.805	58.717	1292.934	1.978%	57.358%
16.0	1773.492	53.607	1346.541	1.806%	59.736%
17.0	1544.625	49.523	1396.064	1.668%	61.933%
18.0	1355.203	45.924	1441.988	1.547%	63.970%
19.0	1199.855	42.837	1484.826	1.443%	65.871%
20.0	1096.446	41.124	1525.949	1.385%	67.695%
21.0	999.942	39.297	1565.246	1.324%	69.438%
22.0	922.570	37.899	1603.145	1.276%	71.120%
23.0	850.648	36.448	1639.593	1.228%	72.737%
24.0	782.508	34.902	1674.496	1.176%	74.285%
25.0	723.959	33.552	1708.047	1.130%	75.773%
26.0	673.854	32.394	1740.441	1.091%	77.210%
27.0	616.908	30.713	1771.154	1.034%	78.573%
28.0	570.593	29.376	1800.529	.989%	79.876%
29.0	522.886	27.799	1828.328	.936%	81.109%
30.0	479.215	26.276	1854.604	.885%	82.275%
31.0	440.473	24.878	1879.481	.838%	83.379%
32.0	405.197	23.547	1903.028	.793%	84.423%
33.0	372.185	22.229	1925.257	.749%	85.409%
34.0	343.434	21.060	1946.317	.709%	86.344%
35.0	317.848	19.992	1966.309	.673%	87.231%
36.0	292.289	18.840	1985.149	.635%	88.066%
37.0	271.751	17.934	2003.084	.604%	88.862%

$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
38.0	249.673	16.856	2019.94	.568%	89.610%
39.0	228.136	15.744	2035.684	.530%	90.308%
40.0	211.015	14.874	2050.558	.501%	90.968%
41.0	194.421	13.987	2064.546	.471%	91.589%
42.0	176.442	12.947	2077.493	.436%	92.163%
43.0	162.352	12.142	2089.635	.409%	92.702%
44.0	150.237	11.445	2101.079	.385%	93.209%
45.0	136.378	10.575	2111.654	.356%	93.678%
46.0	125.480	9.898	2121.552	.333%	94.117%
47.0	114.539	9.186	2130.739	.309%	94.525%
48.0	103.493	8.434	2139.173	.284%	94.899%
49.0	94.078	7.786	2146.959	.262%	95.245%
50.0	85.697	7.199	2154.158	.242%	95.564%
51.0	77.456	6.601	2160.759	.222%	95.857%
52.0	70.910	6.128	2166.886	.206%	96.129%
53.0	64.835	5.678	2172.565	.191%	96.381%
54.0	58.500	5.190	2177.755	.175%	96.611%
55.0	53.571	4.812	2182.567	.162%	96.824%
56.0	48.713	4.429	2186.995	.149%	97.021%
57.0	43.952	4.042	2191.038	.136%	97.200%
58.0	40.219	3.740	2194.778	.126%	97.366%
59.0	36.977	3.476	2198.254	.117%	97.520%
60.0	33.546	3.186	2201.44	.107%	97.661%
61.0	30.762	2.950	2204.39	.099%	97.792%
62.0	28.441	2.754	2207.144	.093%	97.915%
63.0	26.142	2.554	2209.698	.086%	98.028%
64.0	24.532	2.418	2212.116	.081%	98.135%
65.0	23.365	2.322	2214.438	.078%	98.238%
66.0	22.380	2.242	2216.68	.076%	98.338%
67.0	21.600	2.180	2218.861	.073%	98.434%
68.0	20.897	2.125	2220.985	.072%	98.529%
69.0	20.130	2.061	2223.046	.069%	98.620%
70.0	19.526	2.012	2225.058	.068%	98.709%
71.0	18.956	1.966	2227.024	.066%	98.796%
72.0	18.345	1.913	2228.937	.064%	98.881%
73.0	17.873	1.874	2230.811	.063%	98.964%
74.0	17.395	1.834	2232.645	.062%	99.046%
75.0	16.861	1.786	2234.431	.060%	99.125%

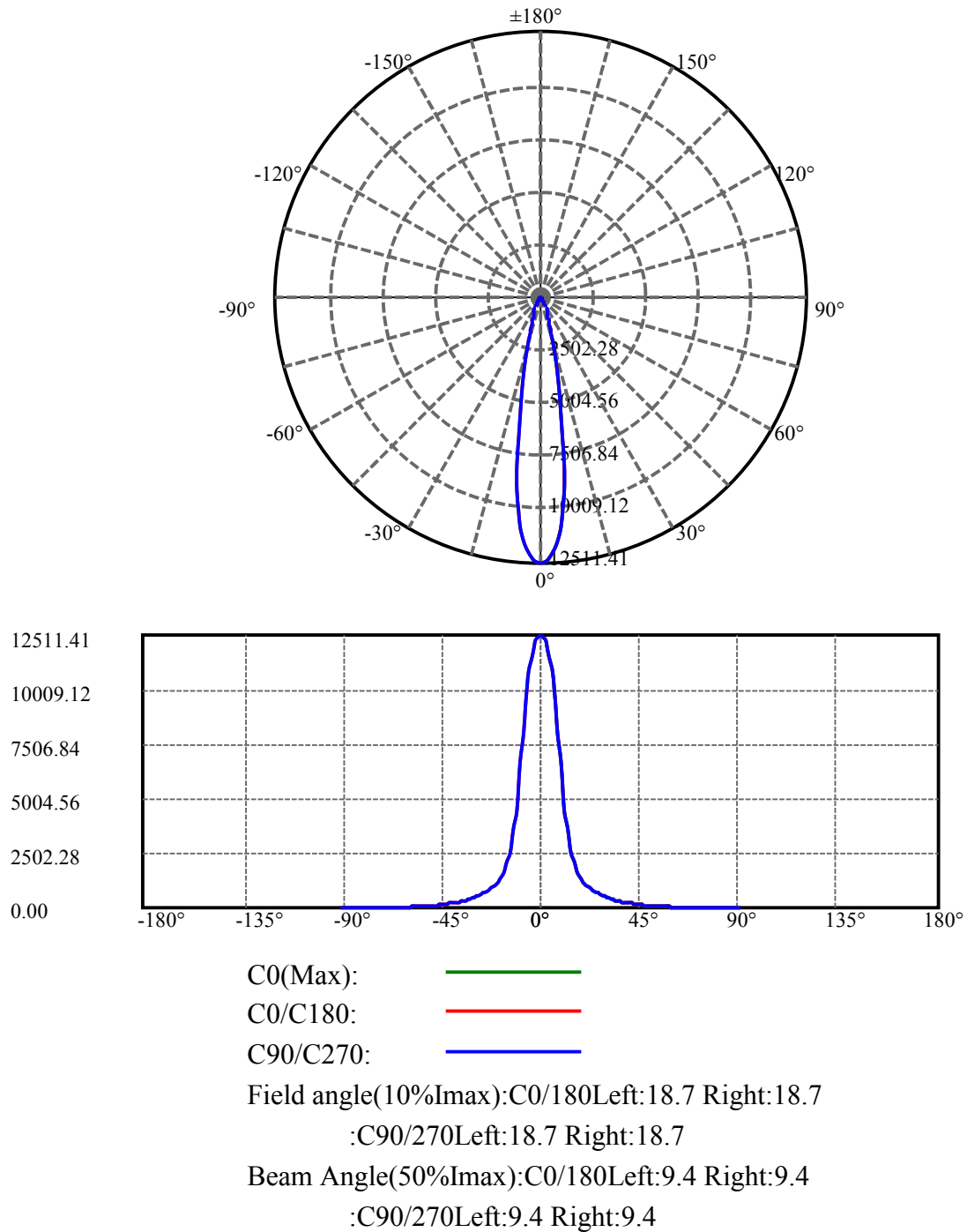
$\gamma(^{\circ})$	Average I(cd)	Zonal F(lm)	Sum F(lm)	Eff Flux(%)	Eff Sum(%)
76.0	16.376	1.742	2236.174	.059%	99.202%
77.0	15.905	1.699	2237.873	.057%	99.278%
78.0	15.314	1.643	2239.516	.055%	99.351%
79.0	14.801	1.593	2241.109	.054%	99.421%
80.0	14.231	1.537	2242.646	.052%	99.490%
81.0	13.584	1.471	2244.117	.050%	99.555%
82.0	12.987	1.410	2245.527	.048%	99.617%
83.0	12.403	1.350	2246.877	.045%	99.677%
84.0	11.742	1.281	2248.158	.043%	99.734%
85.0	11.152	1.218	2249.376	.041%	99.788%
86.0	10.470	1.145	2250.522	.039%	99.839%
87.0	9.928	1.087	2251.609	.037%	99.887%
88.0	9.485	1.040	2252.648	.035%	99.933%
89.0	9.197	1.008	2253.657	.034%	99.978%
90.0	9.056	0.497	2254.153	.017%	100.000%

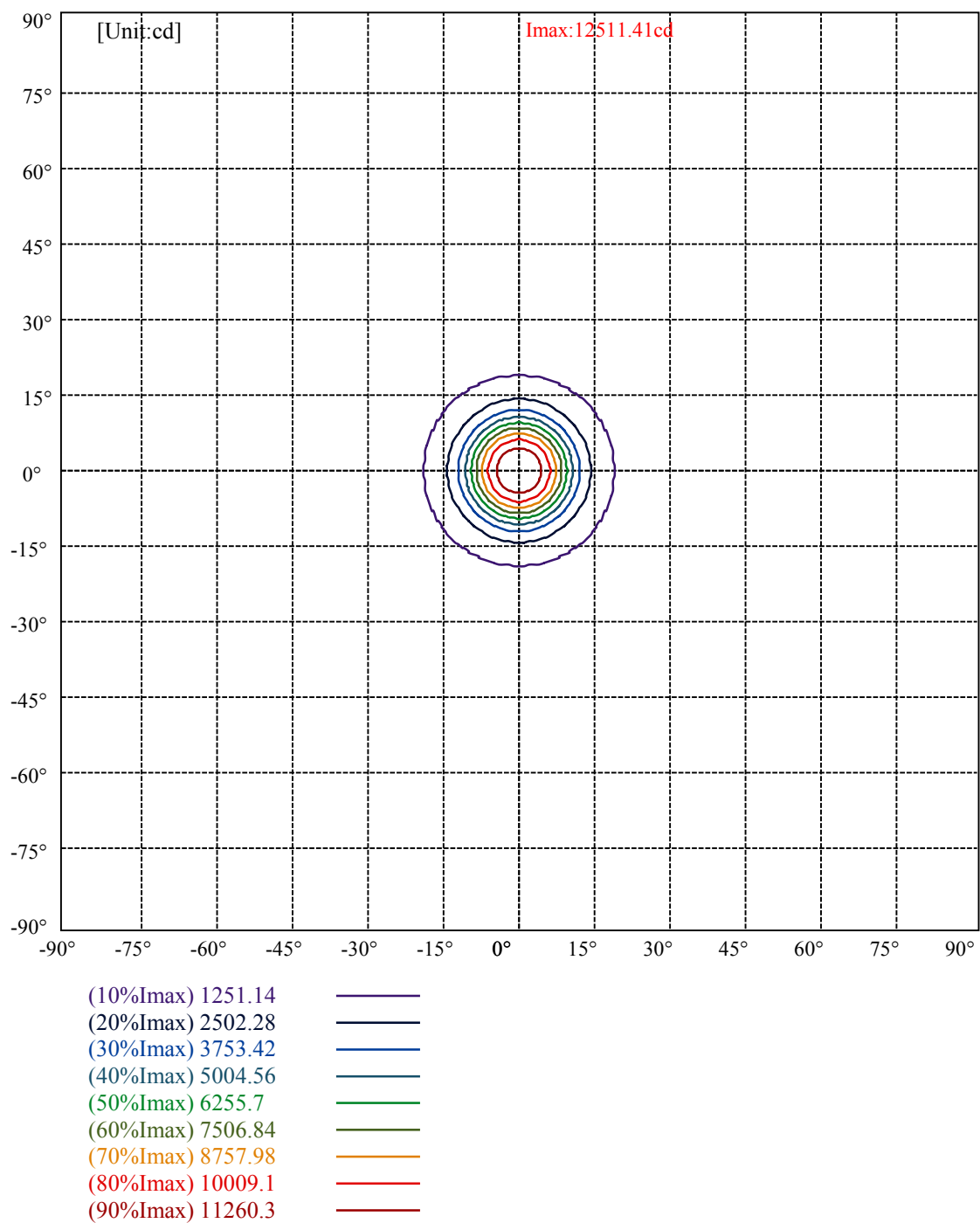
ZONAL LUMEN SUMMARY

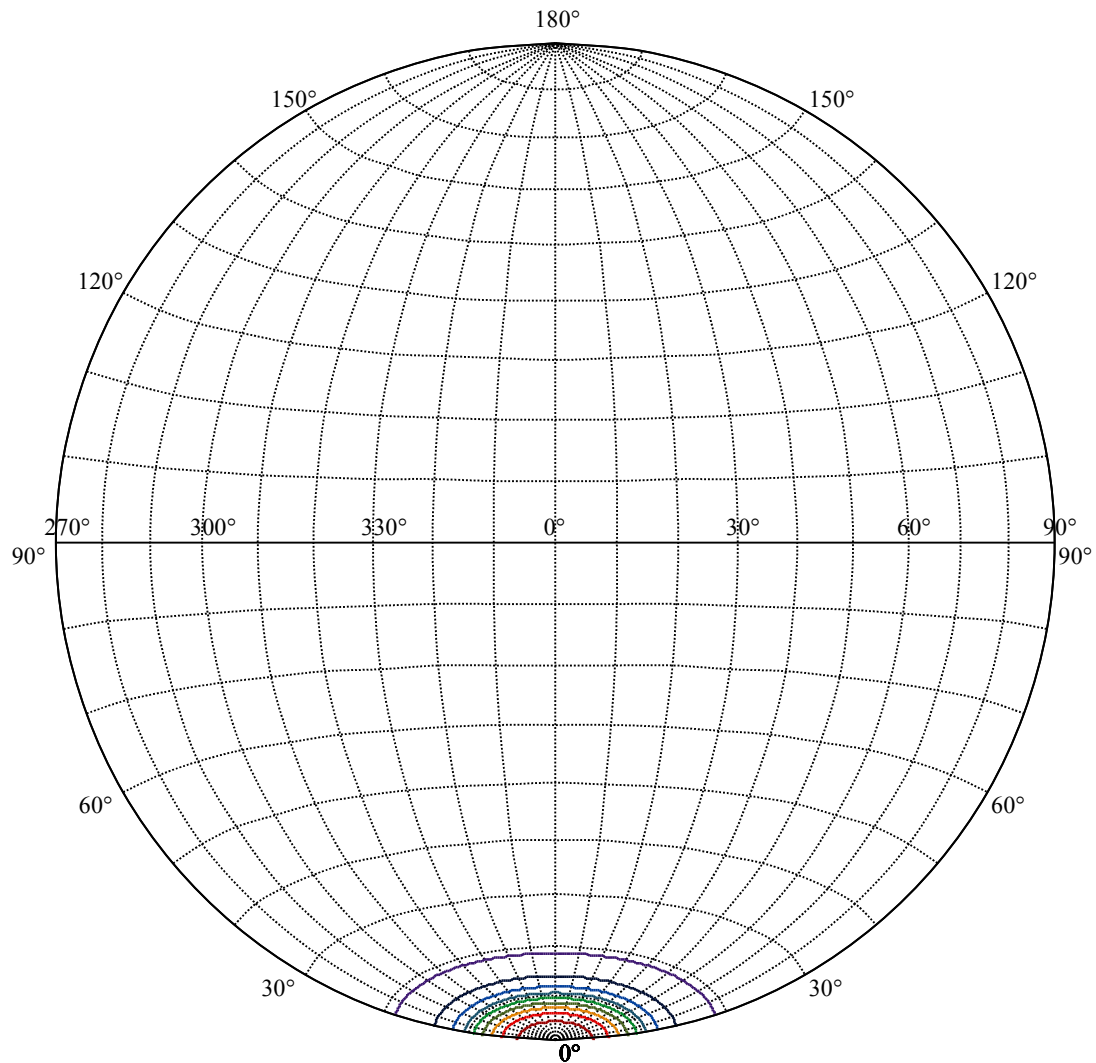
Zone	Lumens	%Lamp	%Fixt
0-30	1854.60	62.47%	82.27%
0-40	2050.56	69.07%	90.97%
0-60	2201.44	74.15%	97.66%
0-90	2253.66	75.91%	99.98%
0-120	2253.66	75.91%	99.98%
0-180	2254.15	75.92%	100.00%
60-90	55.40	1.87%	2.46%
90-120	0.00	0.00%	0.00%
90-130	0.00	0.00%	0.00%
90-150	0.00	0.00%	0.00%
90-180	0.00	0.00%	0.00%
0-28.10	1803.32	60.74%	80.00%

ZONAL LUMEN SUMMARY

0-10	916.24
10-20	609.71
20-30	328.65
30-40	195.95
40-50	103.60
50-60	47.28
60-70	23.62
70-80	17.59
80-90	11.01
90-100	0.00
100-110	0.00
110-120	0.00
120-130	0.00
130-140	0.00
140-150	0.00
150-160	0.00
160-170	0.00
170-180	0.00







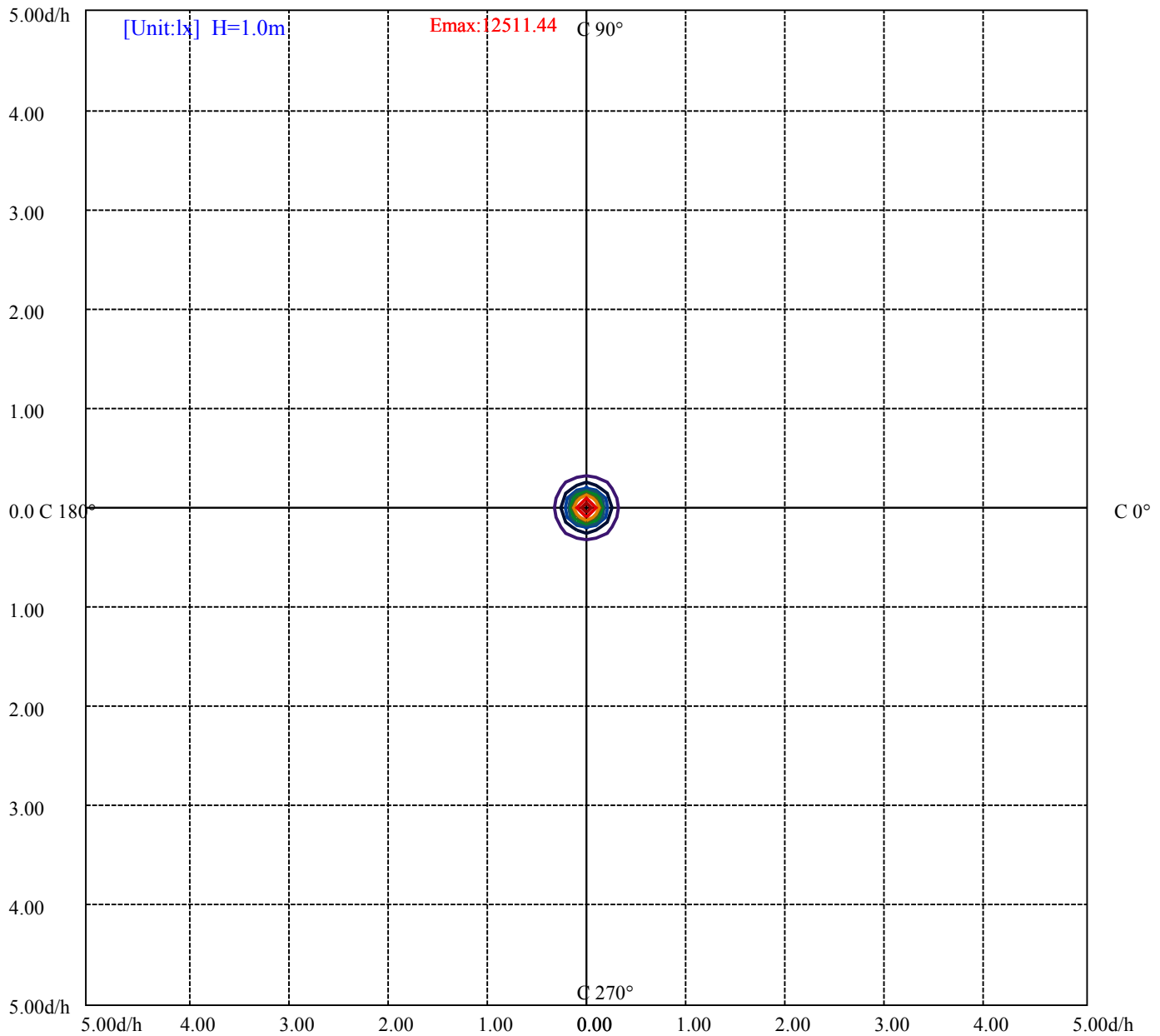
House

[Unit:cd]

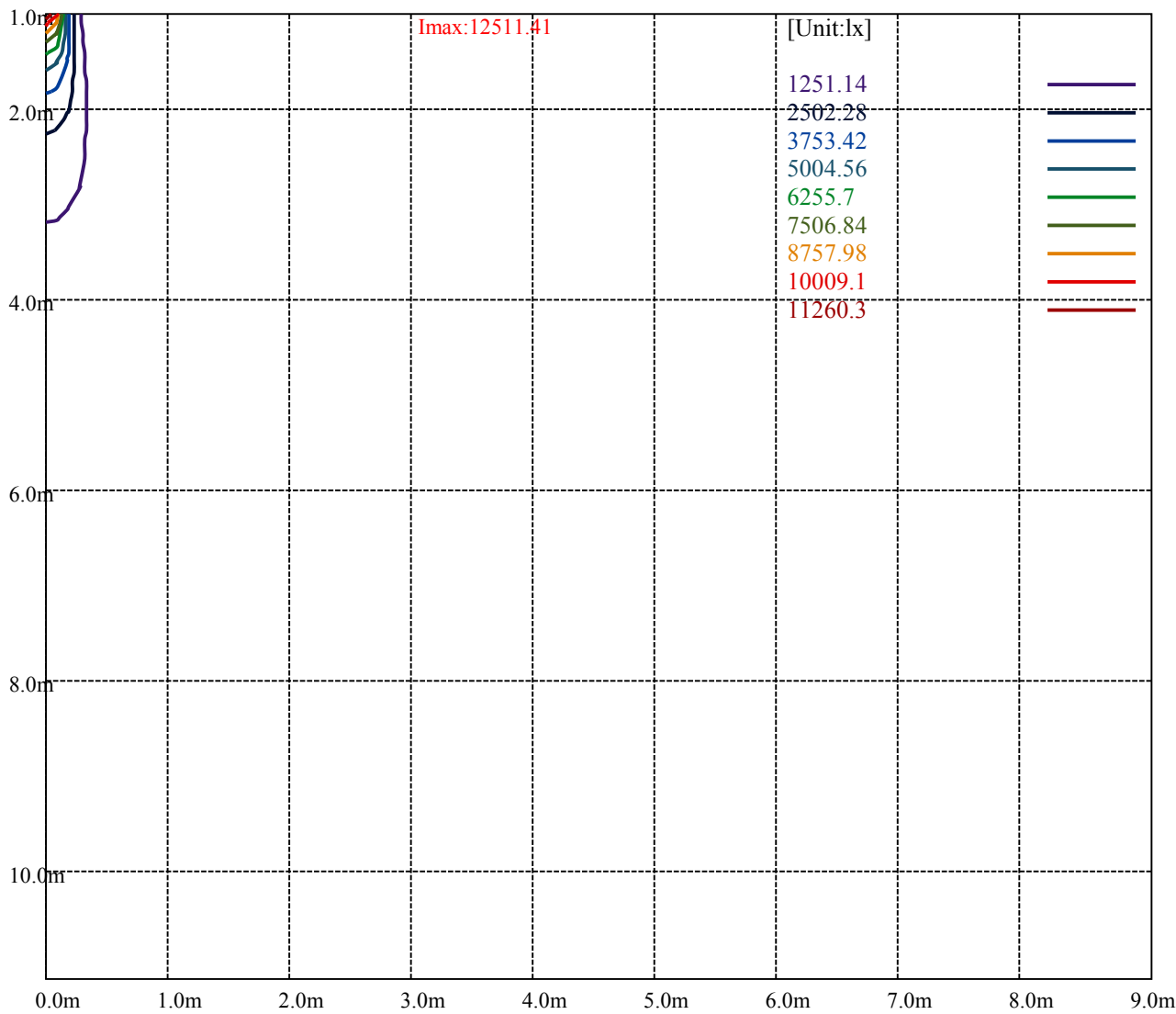
Road

Imax:12511.41

(10%Imax)	1251.14	—
(20%Imax)	2502.28	—
(30%Imax)	3753.42	—
(40%Imax)	5004.56	—
(50%Imax)	6255.7	—
(60%Imax)	7506.84	—
(70%Imax)	8757.98	—
(80%Imax)	10009.1	—
(90%Imax)	11260.3	—



(10%Emax)	1251.14	—
(20%Emax)	2502.28	—
(30%Emax)	3753.42	—
(40%Emax)	5004.56	—
(50%Emax)	6255.7	—
(60%Emax)	7506.84	—
(70%Emax)	8757.98	—
(80%Emax)	10009.1	—
(90%Emax)	11260.3	—



Luminance Table

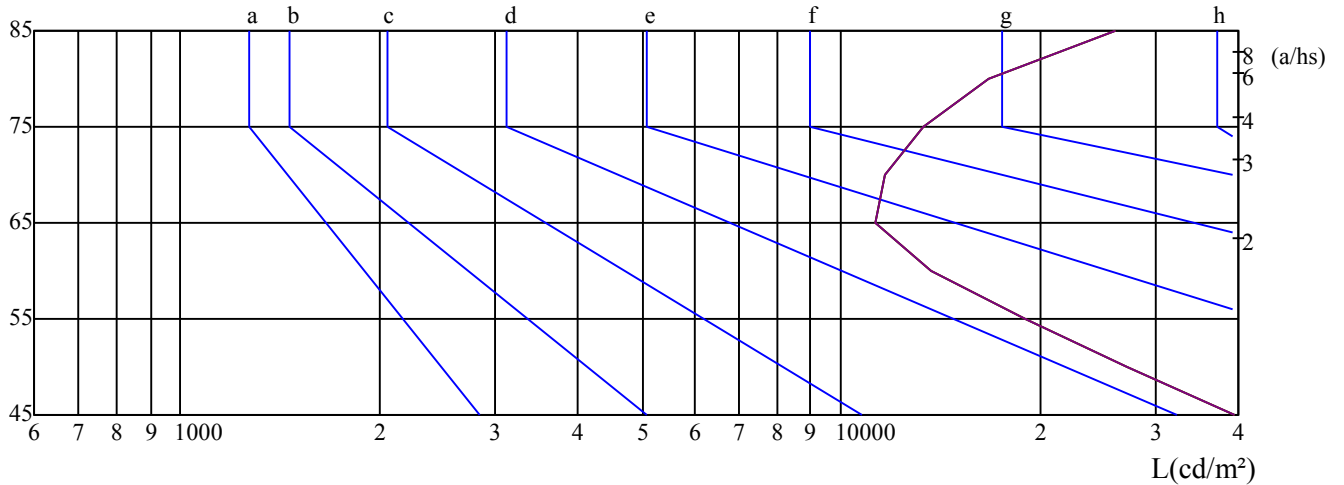
γ	45	50	55	60	65	70	75	80	85
C0	39361	27208	19061	13692	11283	11651	13295	16725	26112
C45	39361	27208	19061	13692	11283	11651	13295	16725	26112
C90	39361	27208	19061	13692	11283	11651	13295	16725	26112

L(Hor)(65)	L(Ver)(65)	L45(65)	L(Hor)(75)	L(Ver)(75)	L45(75)	L(Hor)(85)	L(Ver)(85)	L45(85)
11283	11283	11283	13295	13295	13295	26112	26112	26112

Glare Table

Glare	Quality	Service Values Illuminance(lx)							
1.15	A	2000	1000	500	≤ 300				
1.5	B		2000	1000	500	≤ 300			
1.85	C			2000	1000	500	≤ 300		
2.2	D				2000	1000	500	≤ 300	
2.55	E					2000	1000	500	≤ 300
		a	b	c	d	e	f	g	h

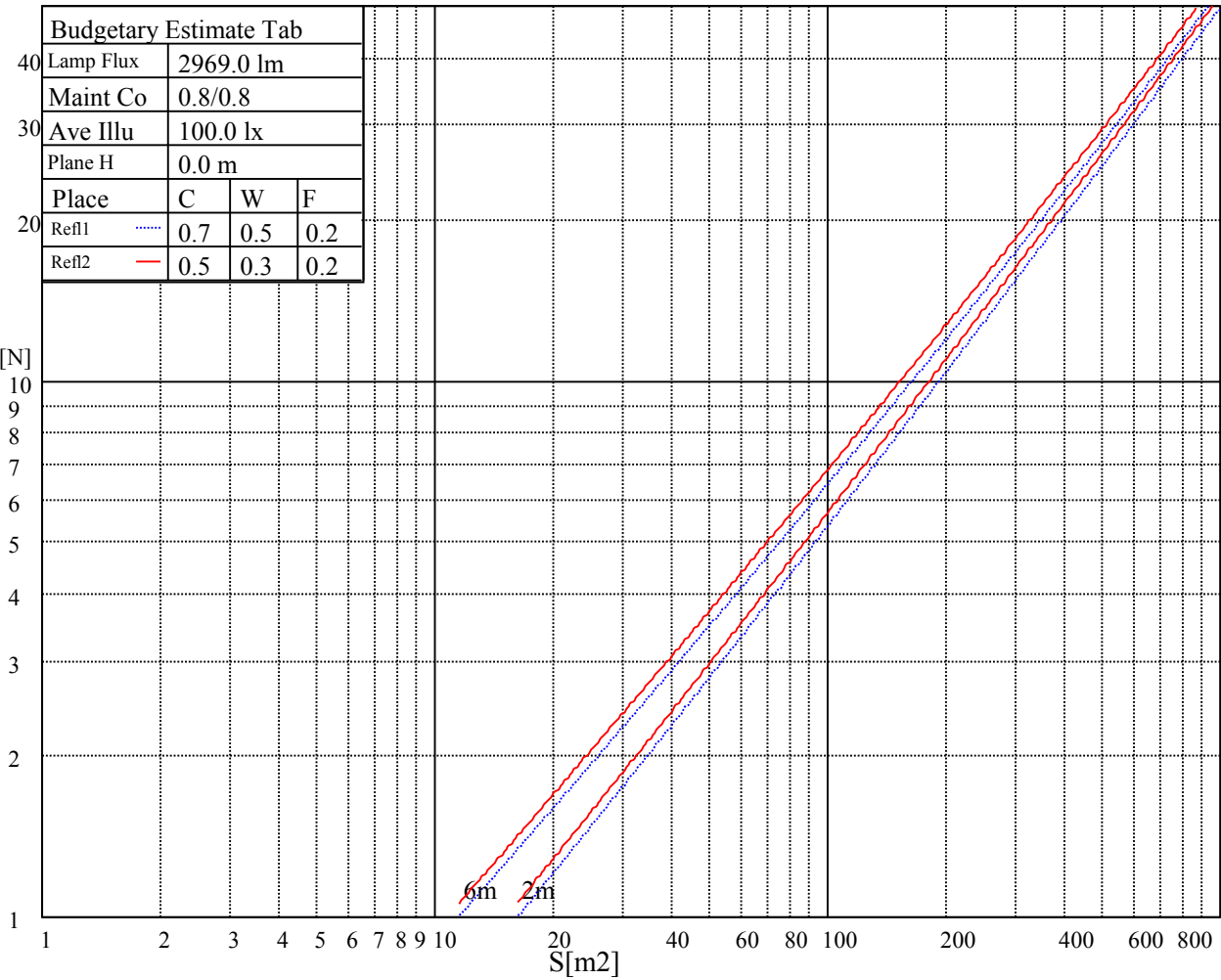
Luminance Limiting Curve

 $\gamma(^{\circ})$ 

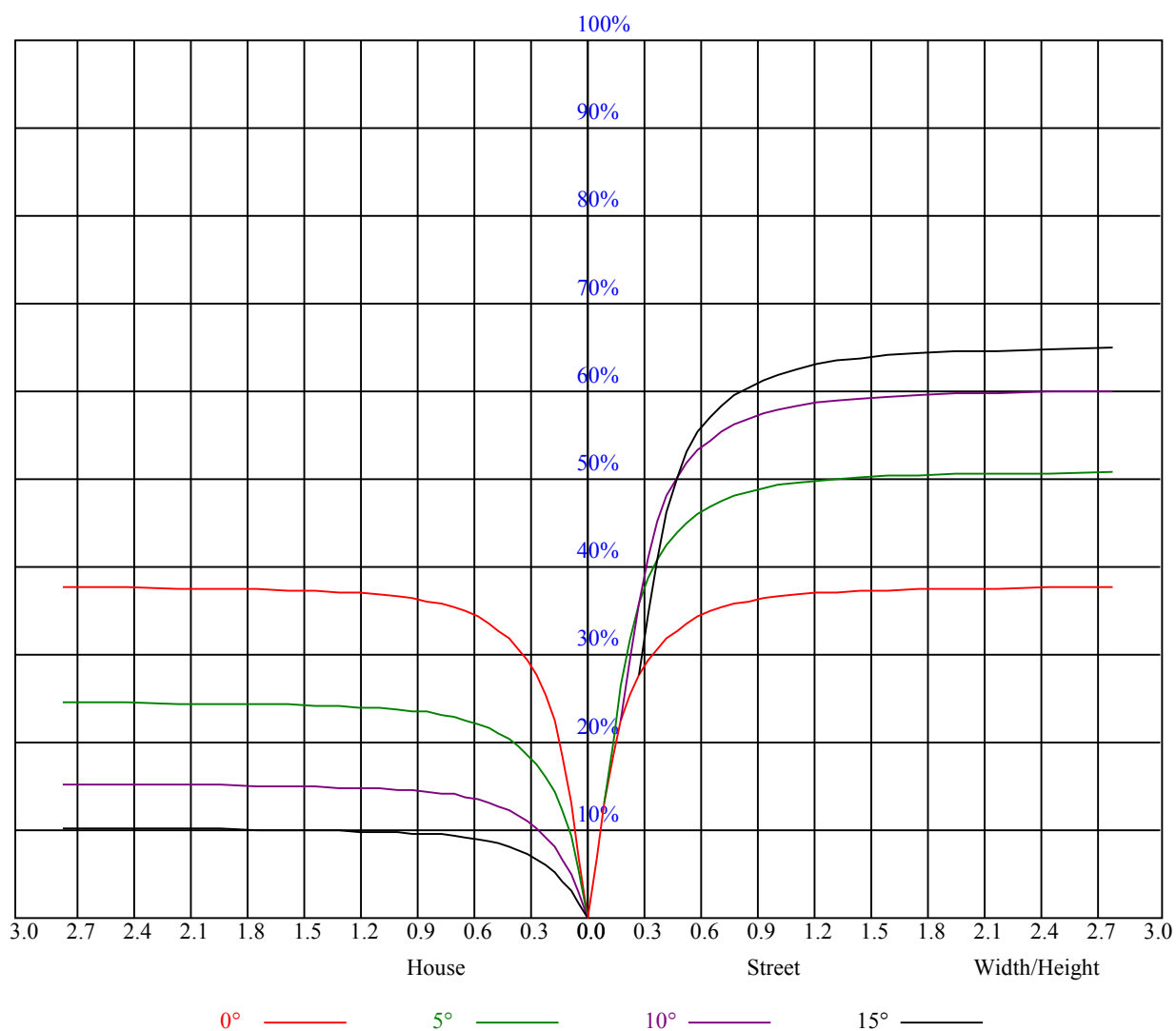
C0 ———

C45 ———

C90 ———



RHOC	80			70			50			30			10			0
RHOW	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR	COEFFICIENTS OF UTILIZATION RHOFC=20 CU															
0	0.91	0.91	0.91	0.88	0.88	0.88	0.84	0.84	0.84	0.81	0.81	0.81	0.78	0.78	0.78	0.76
1	0.85	0.83	0.82	0.83	0.82	0.80	0.80	0.79	0.78	0.77	0.76	0.76	0.75	0.74	0.73	0.72
2	0.80	0.78	0.75	0.79	0.77	0.74	0.76	0.75	0.73	0.74	0.73	0.71	0.72	0.71	0.70	0.69
3	0.76	0.73	0.70	0.75	0.72	0.70	0.73	0.71	0.69	0.71	0.69	0.68	0.70	0.68	0.67	0.66
4	0.73	0.69	0.67	0.72	0.69	0.66	0.70	0.68	0.65	0.69	0.67	0.65	0.68	0.66	0.64	0.63
5	0.70	0.66	0.63	0.69	0.66	0.63	0.68	0.65	0.63	0.67	0.64	0.62	0.65	0.63	0.62	0.61
6	0.67	0.63	0.61	0.66	0.63	0.61	0.65	0.62	0.60	0.64	0.62	0.60	0.63	0.61	0.59	0.59
7	0.65	0.61	0.59	0.64	0.61	0.58	0.63	0.60	0.58	0.62	0.60	0.58	0.62	0.59	0.58	0.57
8	0.62	0.59	0.57	0.62	0.59	0.56	0.61	0.58	0.56	0.61	0.58	0.56	0.60	0.58	0.56	0.55
9	0.60	0.57	0.55	0.60	0.57	0.55	0.60	0.57	0.55	0.59	0.56	0.54	0.58	0.56	0.54	0.53
10	0.59	0.55	0.53	0.58	0.55	0.53	0.58	0.55	0.53	0.57	0.55	0.53	0.57	0.55	0.53	0.52



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Intensity data(cd)										Appendix Page: 16 Total:18	
C/γ(°)	0.0	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0		
0.0	12515.63	12521.25	12346.88	12093.75	11767.50	11131.88	10434.38	9573.75	8431.88		
45.0	12498.75	12363.75	12043.13	11649.38	11131.88	10260.00	9354.38	8296.88	7003.13		
90.0	12481.88	12358.13	12060.00	11204.44	11129.63	10261.69	9490.50	8339.06	6858.56		
135.0	12549.38	12487.50	12318.75	12015.00	11615.63	10929.38	10209.38	9320.63	8178.75		
180.0	12515.63	12420.00	12200.63	11812.50	11165.06	10684.13	9876.38	8776.69	7491.38		
225.0	12498.75	12549.38	12459.38	12234.38	11908.13	11222.44	10820.25	9946.69	8989.31		
270.0	12481.88	12538.13	12431.25	12217.50	11908.13	11328.75	10721.25	9967.50	8898.75		
315.0	12549.38	12481.88	12285.00	11970.00	11221.88	10921.50	10184.06	9165.94	7940.81		
360.0	12515.63	12521.25	12346.88	12093.75	11767.50	11131.88	10434.38	9573.75	8431.88		
C/γ(°)	9.0	10.0	11.0	12.0	13.0	14.0	15.0	16.0	17.0		
0.0	7138.13	5990.63	4820.63	3931.88	3161.25	2885.63	2206.69	1870.31	1660.50		
45.0	5698.13	4646.25	3673.13	2936.25	2868.75	2045.25	1758.38	1502.44	1320.75		
90.0	5839.31	4679.44	3630.94	3062.25	2561.06	2055.94	1815.19	1594.69	1416.94		
135.0	6879.38	5737.50	4606.88	3751.88	3015.00	2880.00	2131.88	1814.63	1597.50		
180.0	6306.75	5070.38	4034.25	3305.81	2752.31	2241.56	1938.38	1697.63	1483.88		
225.0	7754.06	6435.00	5178.38	4208.06	3422.81	2759.06	2262.38	1924.88	1658.81		
270.0	7683.75	6536.25	5321.25	4359.38	3481.88	2880.00	2378.25	1997.44	1702.13		
315.0	6787.69	5532.19	4419.56	3604.50	2972.81	2397.38	2059.31	1785.94	1516.50		
360.0	7138.13	5990.63	4820.63	3931.88	3161.25	2885.63	2206.69	1870.31	1660.50		
C/γ(°)	18.0	19.0	20.0	21.0	22.0	23.0	24.0	25.0	26.0		
0.0	1425.94	1279.13	1159.31	1033.88	946.13	870.19	789.19	732.38	680.63		
45.0	1193.63	1095.19	992.81	919.69	856.69	789.75	725.06	672.19	619.31		
90.0	1240.88	1110.66	1027.52	927.39	859.61	799.65	737.27	679.67	631.80		
135.0	1401.19	1264.50	1122.19	1026.56	943.88	864.00	795.38	738.00	695.81		
180.0	1314.00	1115.38	1064.03	964.18	887.46	815.06	757.74	699.47	651.60		
225.0	1417.50	1278.00	1120.50	1056.04	979.88	911.53	839.53	773.44	718.99		
270.0	1497.94	1335.38	1177.31	1078.31	991.13	907.88	836.44	779.63	726.19		
315.0	1350.56	1120.61	1107.90	993.49	915.81	847.13	779.46	716.91	666.51		
360.0	1425.94	1279.13	1159.31	1033.88	946.13	870.19	789.19	732.38	680.63		
C/γ(°)	27.0	28.0	29.0	30.0	31.0	32.0	33.0	34.0	35.0		
0.0	619.31	573.19	531.56	487.13	445.50	412.31	378.00	347.06	321.75		
45.0	568.69	525.38	478.69	442.13	404.44	371.25	344.81	317.81	292.50		
90.0	581.18	538.14	491.96	450.28	416.59	382.56	352.74	328.05	305.72		
135.0	630.00	582.75	541.13	487.13	446.06	416.81	379.13	349.31	326.81		
180.0	599.79	555.92	504.39	465.98	430.20	389.81	360.96	334.69	310.16		
225.0	660.88	611.33	559.97	513.00	474.24	434.59	398.31	368.55	340.71		
270.0	663.19	613.69	562.50	519.75	474.19	438.19	401.06	367.31	336.38		
315.0	612.23	564.36	512.89	468.34	432.56	396.06	362.48	334.69	308.76		
360.0	619.31	573.19	531.56	487.13	445.50	412.31	378.00	347.06	321.75		
C/γ(°)	36.0	37.0	38.0	39.0	40.0	41.0	42.0	43.0	44.0		
0.0	294.75	284.06	249.30	229.28	213.47	196.20	176.74	163.35	151.03		
45.0	284.63	251.78	233.83	216.62	198.06	183.09	163.86	151.20	140.23		
90.0	279.56	260.16	242.55	222.02	203.40	186.81	170.89	156.38	143.94		
135.0	298.13	284.06	252.90	233.72	217.29	199.58	180.11	166.61	154.58		
180.0	282.32	261.62	242.66	221.29	203.34	186.86	170.61	156.15	144.23		
225.0	308.76	286.31	265.61	242.55	226.13	209.53	191.25	174.49	161.55		
270.0	311.06	288.00	271.35	240.98	223.76	206.27	186.30	172.63	159.98		
315.0	279.11	258.02	239.18	218.64	202.67	187.03	171.79	158.01	146.36		
360.0	294.75	284.06	249.30	229.28	213.47	196.20	176.74	163.35	151.03		

Intensity data(cd)

C/γ(°)	45.0	46.0	47.0	48.0	49.0	50.0	51.0	52.0	53.0
0.0	136.74	126.06	115.76	105.02	94.95	86.68	78.47	71.94	65.42
45.0	124.37	114.08	105.58	94.05	85.05	78.81	70.88	64.63	59.68
90.0	130.95	119.87	108.39	97.76	89.38	80.83	73.18	66.99	61.37
135.0	140.01	129.38	118.35	107.10	96.69	89.04	80.27	73.18	66.26
180.0	131.51	120.71	109.35	98.78	90.23	81.68	73.86	67.67	62.04
225.0	147.71	135.84	122.91	111.04	101.42	91.29	82.46	75.60	69.41
270.0	145.24	133.93	123.13	111.77	101.03	92.08	83.42	76.44	69.47
315.0	134.49	123.98	112.84	102.43	93.88	85.16	77.12	70.82	65.03
360.0	136.74	126.06	115.76	105.02	94.95	86.68	78.47	71.94	65.42
C/γ(°)	54.0	55.0	56.0	57.0	58.0	59.0	60.0	61.0	62.0
0.0	59.57	54.79	49.50	44.89	41.29	38.03	34.31	31.67	29.19
45.0	53.49	48.77	44.55	40.11	36.96	34.14	30.88	28.46	26.49
90.0	55.13	50.23	45.96	41.68	37.91	34.93	31.84	29.08	26.94
135.0	60.08	55.13	49.50	44.66	41.23	37.97	34.14	31.33	28.97
180.0	55.69	50.85	46.41	41.96	38.19	35.10	32.12	29.36	27.23
225.0	62.44	57.32	52.48	46.74	42.75	39.15	35.72	32.57	30.04
270.0	63.11	57.94	52.48	47.31	43.37	39.71	35.83	32.96	30.38
315.0	58.50	53.55	48.83	44.27	40.05	36.79	33.53	30.66	28.29
360.0	59.57	54.79	49.50	44.89	41.29	38.03	34.31	31.67	29.19
C/γ(°)	63.0	64.0	65.0	66.0	67.0	68.0	69.0	70.0	71.0
0.0	26.83	24.92	23.74	22.78	21.88	21.15	20.42	19.80	19.18
45.0	24.64	23.34	22.56	21.60	20.81	20.14	19.52	18.96	18.39
90.0	24.92	23.85	22.78	21.88	21.15	20.48	19.69	19.13	18.56
135.0	26.61	24.53	23.40	22.39	21.60	20.87	20.19	19.52	18.96
180.0	25.14	23.79	22.73	21.83	21.15	20.48	19.74	19.13	18.62
225.0	27.28	25.65	24.02	22.84	22.16	21.43	20.48	19.97	19.41
270.0	27.73	25.65	24.30	23.23	22.33	21.60	20.81	20.14	19.52
315.0	25.99	24.53	23.40	22.50	21.71	21.04	20.19	19.58	19.01
360.0	26.83	24.92	23.74	22.78	21.88	21.15	20.42	19.80	19.18
C/γ(°)	72.0	73.0	74.0	75.0	76.0	77.0	78.0	79.0	80.0
0.0	18.56	18.06	17.55	17.04	16.59	16.09	15.53	15.02	14.51
45.0	17.89	17.38	16.99	16.43	15.98	15.47	14.79	14.29	13.73
90.0	18.00	17.61	17.16	16.65	16.14	15.69	15.13	14.57	13.95
135.0	18.39	17.94	17.44	16.93	16.48	15.98	15.36	14.79	14.23
180.0	17.94	17.44	16.93	16.37	15.81	15.36	14.74	14.23	13.61
225.0	18.68	18.23	17.78	17.27	16.71	16.26	15.75	15.24	14.68
270.0	18.90	18.39	17.89	17.27	16.88	16.48	15.86	15.41	14.91
315.0	18.39	17.94	17.44	16.93	16.43	15.92	15.36	14.85	14.23
360.0	18.56	18.06	17.55	17.04	16.59	16.09	15.53	15.02	14.51
C/γ(°)	81.0	82.0	83.0	84.0	85.0	86.0	87.0	88.0	89.0
0.0	13.78	13.16	12.66	11.98	11.42	10.80	10.13	9.62	9.23
45.0	13.11	12.54	12.04	11.36	10.69	10.01	9.56	9.23	9.06
90.0	13.33	12.83	12.32	11.48	10.63	10.01	9.56	9.23	9.06
135.0	13.50	12.88	12.26	11.64	11.08	10.35	9.84	9.39	9.17
180.0	13.05	12.43	11.81	11.19	10.74	10.07	9.62	9.28	9.00
225.0	14.12	13.50	12.88	12.21	11.64	10.91	10.41	9.90	9.51
270.0	14.23	13.61	12.94	12.32	11.81	11.03	10.41	9.79	9.39
315.0	13.56	12.94	12.32	11.76	11.19	10.58	9.90	9.45	9.17
360.0	13.78	13.16	12.66	11.98	11.42	10.80	10.13	9.62	9.23

Intensity data(cd)

Appendix Page: 18 Total:18

C/ $\gamma(^{\circ})$	90.0
0.0	9.00
45.0	9.06
90.0	9.06
135.0	9.06
180.0	9.00
225.0	9.23
270.0	9.06
315.0	9.00
360.0	9.00